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ABSTRACT

Undergraduate project work at the University of Bath, England, was investigated through a survey of students and project supervisors. The investigation as conducted for each of two academic years with two different respondent groups, and the first year questionnaire and a revised second-year version are appended. To facilitate reference to the phase of project work, findings are presented under the following categories: project choice, project initiation, development and progress, staff/student relationships, assessment, and resources. In the majority of cases, project topics originate entirely from ideas generated by papers in current literature, but in some instances topics have their origin in a problem from industry. It appears that students consider the potential supervisor of their projects as much as the topics offered. In the majority of projects, the students' first tasks was to consult the literature. The use of a timetable by some students seemed to be helpful. In general, supervisors were pleased with the way their students went about their projects and they developed a good working relationship. Projects that involved three or more students used a design exercise approaching the type of work they might encounter in industry. Whatever the method of assessment, students seemed to feel that it was reasonably fair. Additionally, resources provided constraints on some possible topics, and the availability of equipment and cost limits were factors. Concerns for further consideration regarding student projects include: students' report writing skills, danger of oversupervision, presentation of possible topics, and assessment criteria. Appended materials include: a student project case study and questionnaire responses. (SW)

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UNDERGRADUATE PROJECT WORK

PART I: THE REPORT

N.D.C.Harris
and
B.Smith

University of Bath 1981

CONTENTS

Introduction	page 1
The First Year	page 4
The Second Year	page 8
Results	page 10
Review and Recommendations	page 23
Appendicies	page 27
References	page 56

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HE 014 869

UNDERGRADUATE PROJECT WORK

N.D.C. HARRIS & B. SMITH

UNIVERSITY OF BATH

INTRODUCTION

Undergraduate project work: a simple title which belies the complex nature of the subject. As a result of earlier work on projects based at the University of Bath (Black 1975: Clemson 1977: Dowdeswell 1970, Dowdeswell and Harris 1979) funds were made available by the University to look into the workings of a project. To date most published work studying projects has examined them from the outside, for example looking at the role of a project (Harding 1973 (a) and (b))and describing the different types of projects and their use as a teaching method (Adderley et al 1975). Few authors concur on the aims,objectives and definitions of a project as is succinctly illustrated by Gabb (1979) and (1980). The object of this investigation is to reveal the inside view, to really get the feel of the project from both student and staff standpoint, but to do so without upsetting the balance of relationships existing and forming between student and supervisor.

In most departments within the university projects form part of the final year course. It is often only then that projects are used. It was therefore decided to investigate only final year projects. A second decision made was that projects from schools of science and engineering would be

explored. It was thought that projects which contained an element of practical work, as is most common in such departments, would show a broader spectrum of staff/student interaction and relationships then would those requiring only the use of the library.

In order (i) to take account of possibly differing aims and objectives within each department and (ii) to study, in depth, each project under consideration, it was decided to cover only one or two projects from each school. Of necessity a considerable amount of time must be spent in getting to know the principals involved in each project and following their activities over the academic year, which was another reason for keeping numbers small and also avoiding the danger of generalised and possibly superficial conclusions. It was possible to increase the number of projects studied in the second year of the investigation as the method used became more refined and because of the expertise gained in the primary year.

In this university many students are following a four year snadwich course incorporating industrial placements. Students with and without industrial placement experience were involved in both years of this study. Amongst those who had been into industry some had encountered project work whilst others worked in more routine fields. The effect of their experiences on some of those students who had encountered project work is quite enlightening, as will be shown later.

The students who were involved in the first year of the

study tended to be from the upper end of the ability range. Therefore, in the second year, an attempt was made to involve a cross-section of the ability range by deliberately asking to approach less able students, where possible, to become participants in the investigation. When deciding to carry out this study into projects a two year period was suggested, the first year to develope a method of collecting and analysing information; the second year to use the method and obtain results.

THE FIRST YEAR

(1) DEVELOPMENT OF METHODOLGY

In attempting to formulate a method for investigating undergraduate project work it was of primary importance to appreciate what exactly a project entails. To do this, informal discussion took place between the researcher and the Director of Studies of various Schools within the university. Each School has its own way of running a project but at this stage it was possible to construct a typical model (fig 1) of the "life" of a project which was true for the majority of schools involved.

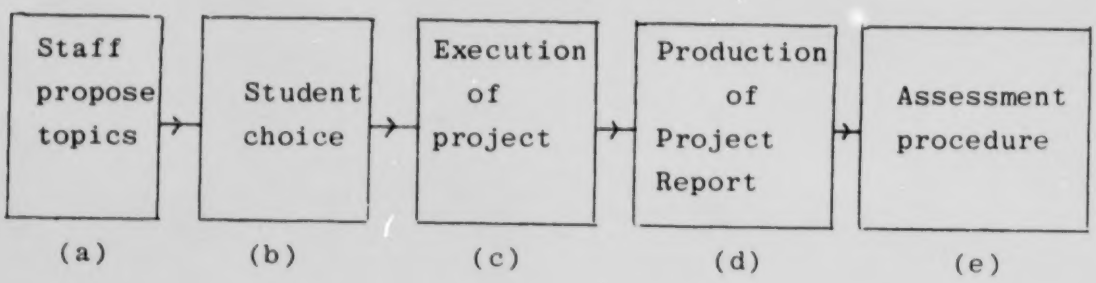

Fig 1 A simple model of the progress of a project.

Fig 1 gives a simplified picture of a project. As a basis it proved useful and will be expanded at a late stage.

Having established a model for the life of a project the next stage was to decide how to collect the right sort of data from staff and students. A previous study of projects in one School of the university had used questionnaires for both staff and students (Good 1978) (Appendix A I & II). The questionnaires appeared to examine relevant areas concerning projects generally, so it was decided to use them, suitably modified, not necessarily as source of raw data, but to initiate discussion between the researcher and the supervisor or student who had completed each individual questionnaire.

Contact was made with the project supervisors through the Director of Studies for each School. Where possible this initial meeting took place before the students returned to

the university after the summer vacation, and therefore probably before the supervisor knew with which student or student projects he would be involved. For the purpose of this study it was important for the researcher to contact the student by stage (b) on Fig 1. (i.e. Student Choice) at the latest.

It would be wrong to call the meetings held with the supervisors something as formal as an interview for at this early stage so much was to be learnt about the administration of projects within different Schools that it would have been presumptuous to have questioned in any detail. It would be more accurate to use the term "informal discussion" and,with the permission of all participants,a tape recording was made for analysis at later stage. Surprisingly this fostered the free flow of information, and allowed accurate quotations to be used in this respect

Confidentiality was assured to all those taking part. This was laid down in the brief of the investigation.

In some instances members of staff supervise more than one project, but only one project from each supervisor was studied in the first year. Before contact was made with the students they were asked by their supervisors if they were willing to participate in this research. Unfortunately this usually precluded the researcher from being present at the first project meeting between supervisor and student, but usually contact was established within two or three days of this meeting. The students were asked to complete a questionnaire and recorded informal talks took place. An attempt was made to be present at meetings between supervisor and student when the project was being discussed; since these talks tended not to be pre-arranged this proved difficult.

Talks with students and supervisors and visits to the students as they worked on their project continued as often as possible throughout the academic year. Once the project was completed and the final examinations over,

the overall reaction of the student to their project was sought, both by the researcher and another investigator who was familiar with the study but had not been directly involved with the collection of information. This was done on order to help check that the researcher had not unknowingly influenced the participants.

The information this collected was subsequently analysed. It is presented in the RESULTS section and also as case studies of each project in Undergraduate Project Work: Part III (Harris and Smith 1981). An example of a case study is given here in Appendix C.

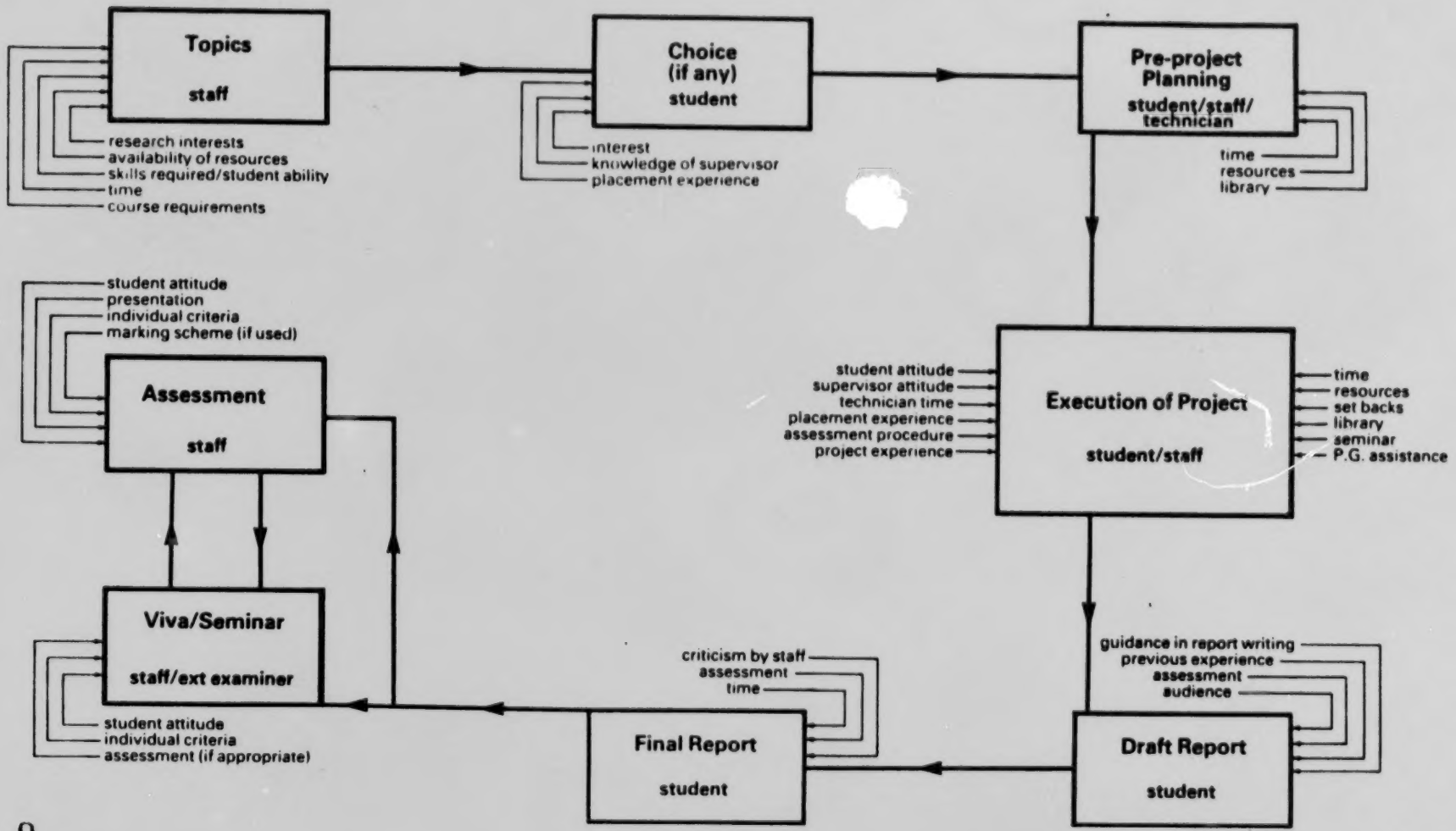

Fig 2

A Scheme of Project Work

THE SECOND YEAR

REFINEMENT OF INVESTIGATION METHODS

Fairly early in the first year it was realised that the questionnaires used were not entirely suitable for this type of inquiry. They were too long, rather obscure to some of the participants; a new questionnaire was produced for use in the seond year.

Since the questionnaires were to be used as a foundation for interviews and talks with both staff and students, the new questions were kept fairly straightforward and did not always ask for reasons or answers in great depth. Examples of the revised questionnaires are shown in Appendix B I and II.

The new questionnaire was the basis for the second year investigation. Other questions remain to be asked, these were based on the more complex model of a project "life" as shown on Fig 2 overleaf.

This model was developed from the earlier model (Fig 1) to include the influences which can be brought to bear on an project at each stage. These influences were suggested by supervisors in the discussions held with them in the first year. Not all influences are applicable to every project, nor is each stage necessarily present, but the representation in Fig 2 is typical for the majority of projects encountered.

With the changes outlined above, the investigation was conudcted as in the previous year, but with the different supervisors and different students. The procedure can be summarised thus:

1) Contact with Schools via Director of Studies
2) Contact with supervisors/supervisors questionnaires
3) Contact with students/student questionnaires
4) Series of meetings/interviews with supervisor/student as frequently as possible throughout the course of the project.
5) Post-project meetings with staff and students
6) Second interviewer meeting with student (where possible).

The number of students, supervisors and hence projects studied was increased in the second year, though by only a small amount so that the depth of understanding of each project was retained. It was possible to increase the numbers involved for two reasons:

(i) experiance and familiarity with the procedure meant that the investigation could be carried out more efficiently.

(ii) as one aspect covered in the first year was covered less fully in the second: Resources.
This important feature was the basis of a separate investigation that developed a method of investigating and costing all resources used in an undergraduate project (Harris and Bullock 1981). It would be wrong to say that resources were ignored in the second year, for their effect on the conduct of a project can be very significant, but they were not investigated particularly.

RESULTS

For those who are involved with the administration and supervision of final year projects some interesting findings are recorded in the following pages. To facilitate easy reference to particular phases of project work these facts are presented under the following headings:

1) Project Choice
2) Project Initiation
3) Development and Progress
4) Staff/Student Relationships
5) Assessment
6) Resources

Direct quotations from recorded interviews are used to give emphasis to various points of view in the following material.

Additional information, which could possibly have a bearing in the conduct of a project, relating to possible marks and timetable hours for projects was collected and is shown in Table 1

School	Timetabled hours/year	Marks as % final year	Marks as % degree
A	154	30 (average)	25 (average)
B	154	16.7	11.5
C	42	11.4	8.4
D	308	20	20
E	154	6.67	5
F	308	31	20
G	160	16.7	11.5
H	175	22.8	16.9
J	259	28.6	14.3

Table 1

Comparisons of timetable hours and available marks for final year undergraduate projects in various Schools

As can be seen from Table 1, each School timetables a different number of hours for its projects. It also shows the possible marks to be gained in the project as a percentage.

(i) for the final year

(ii) for the overall degree mark

It is interesting to note that, despite great differences between some Schools in the marks available for projects, when talking to the researcher about the role of projects staff in different Schools emphasised the importance of their inclusion with equal intensity.

1) PROJECT CHOICE

Not all schools offer a choice of projects to their final year students, though where two projects are carried out at least one has an element of choice of topic available Those who do not have a choice are usually involved in a design project where working as a team is part of the exercise.

In the majority of cases the topics originate entirely from the ideas generated by papers in current literature, but in some instances project topics offered to the students have their origins in a problem from industry. There are constraints which must be considered by all staff when devising project topics:- space, availability of materials, and equipment, cost and overall feasibility. Another constraint mentioned by some supervisors was that project supervision should not take up too much of their time. This aspect being very much dependent on the student(s) involved. Those students who had not choice of project topic worked in groups to which they were allocated. They made no comment on lack of choice available to them.

In only one school is the choice of project officially made before the start of the final year. It was also found in other schools that some students approached staff about the possibility of doing a project with them and occasionally staff mentioned to students that they could offer an interesting final year project. These excahanges took place either on placement visits or in the term prior to the start of the final year. In most cases the students were given a list of topics from which to choose a project, the reason being that they should discuss a project outline with the member of staff who would supervise the project before making a final decision. In all but one situation where project choice was available, supervisor choice also took place.

The exception was that of one student who explained

> *".... I was organised into this project without having a chance to discuss the others on my list...."*

This student was not unhappy with the project topic but had great reservations about the supervisor. Other comments from students were

> *".... I wanted to work with (supervisor) - I knew he would have the best topics...."*
>
> *".... We didn't consider some (project topics) because of the supervisor...."*
>
> *".... I like the idea of projects....no one has done work on my project before...."*
>
> *".... We gave as much thought to the choice of supervisor as to the topic...."*
>
> *".... I wanted to do a topic with someone who seemed a reasonable person...."*
>
> *".... I knew I could work well with him (supervisor)...."*
>
> *".... I like the idea of being left to work very much on my own and I can go for help when ever I want it...."*
>
> *".... there were some members of staff that I felt I couldn't work with.... I'm not the sort of person who wants someone looking over my shoulder all the time. In fact it puts me off...."*
>
> *".... basically I enjoy doing my own work and I'd rather do it like this than have to attend lectures and things...."*
>
> *".... I altered the project to fit me...."*

This last comment is very significant; something similiar being said by a small number of other students. This shows that there was flexibility in some departments and by some supervisors who were willing to adapt their original project topics to fit in with the placement experience of a student.

It would appear to be a common feature that students consider the potential supervisor of their projects as much as the topics offered, tending to approach supervisors with whom they have had contact and feel they 'know' well enough to work with satisfactorily. This situation could well lead to certain members of staff being overloaded with project students and others having none at all - not just for one year but as a general rule. Further emphasis can be given by reference to staff: question 5 in Undergraduate Project Work; Part II Questionnaire Responses Harris and Smith 1981.

2) PROJECT INITIATION

In the majority of the projects studied one of the students first tasks was to consult available literature. The supervisors usually provided the first leads. From the following comments it is shown that there is variation in different areas of library facilities.

> *"....it's very difficult to find anything if you're doing something a bit different from the norm...."*
>
> *"....to be honest all the literature here is out of date...."*
>
> *"...the material is quite good! I was quite surprised...."*

In parellel with the literature search came the setting up of the equipment required for experimental work. This part of the project was exasperating for most of the students:

> *"....I've spent the first couple of months just sorting out equipment and getting the stuff I wanted...."*

Some students felt that their supervisors could have been more helpful in obtaining equipment.

> *"....The technicians will give things to staff that they wouldn't let us (undergraduates) near...."*

Beginning a project can be difficult time for students. It is an area to be watched carfully but unobtrusively by supervisors. Ready availability of supervisors is an important aspect in this phase. Student capability does not always meet up with supervisors expectation at this time.

3) DEVELOPMENT AND PROGRESS

As each project progressed in its own unique way details of this stages are given in the individual case studies (Undergraduate Project Work: Part III: Case Studies). One aspect worthy of general comment is the use by some students of a schedule for their project work. Those who decided at an early stage on some form of timetable, of their own volition or at the insistence of their supervisors did not appear to become quite so agitated towards the conclusion of their projects as did their less organised peers.

4) STAFF/STUDENT RELATIONSHIPS

The majority of students were as careful about choosing their supervisors as they were in choice of topic. Their idea being that once the project was under way they would be left to proceed in their own way, occasionally seeing their supervisors to let let them know of any problems, setbacks and progress. Although these were the students aspirations before the work began, in practice many of the students felt that guidance and help from their supervisors was lacking in the early stages, but conversely they did not want supervisors to be....

".... standing over us all and breathing down our necks...."

One comment being:

".... I'd go along to see (supervisor) and (supervisor) would say "I'm too busy, I can't see you now." (Supervisor) is better now Im getting results and (supevisor) is interested. But in early stages it was difficult to get hold of (supervisor) and thats when help is needed...."

Another of the students, who claimed to enjoy working alone and who was not often in contact with his/her supervisor, said:

".... It would be nice sometimes to have (supervisor) come up and say "What are you doing?" or "Don't you think you could do...." On the other hand I don't get pressed into things like some people do...."

It is the above type of statement which indicates that perhaps some students are not as independent and capable as they would wish to appear.

In general the supervisors involved in this study were pleased with the way their respective students went about their projects. Supervisor and student developed a good working relationship. Nevertheless some supervisors were rather disappointed with the standard of report presentation implying that higher standards of writing should be expected of final year students. Possibly the perception of what is

required differed between student and supervisor.

Most supervisors warned their students of the dangers of spending to much time on their projects to the detriment of other studies. In fact one supervisor had to stop a student from doing more experiemental work:

".... for his own good...."

so that what had been accomplished could be written up. In order to get the most out of a project both staff and students emphasised the need for a good relationship between each other. One student commented

".... You'd have to be very stupid to choose a project with a supervisor that you didn't get on with...."

and another said:

".... I assume it's not a good thing to fight with your supervisor...."

In one case, the student felt pressured for most of the time, being able to do only what the supervisor wanted. When the supervisor was away for some time the student was much happier with the project, but because the of earlier experience, concealed results on the supervisors return. This led to problems in the writing up, and to a sense of anti-climax and frustration for both student and supervisor.

Probably because of the consideration given by the students to their potential supervisors most of the relationships were harmonious. Even those students who had no choice of either topic or supervisor appeared to have no problems in this area, most staff being helpful and co-operative, others who were known to be not very helpful tended to be avoided. Where friction did occur it was not always obvious. The resentment was not open, the student realizing that to oppose the supervisor would not improve the project marks and could well jeopardize his prospects.

Group Projects

Projects which involve three or more students can be conveniently described as group projects. There were between five and twelve students in the groups encountered in this study which made it impossible for the researcher to get to know all the students in all the groups as thoroughly as those doing the individual projects.

One common feature of the group projects is that the subject of the projects is a design exercise, and another is that most of the project work is concentrated into the few weeks after the students have taken their final examination. This timing made it difficult for some students to concentrate on their projects or effectively as they would have liked to do. One important issue that was raised was the quality of the team work. Whilst the students enjoyed working in a team, where one or more students was not putting in as much effort as the others, they felt aggrieved in that their project level was being pulled down or that the 'slacker' was being carried through as a result of others work.

Working as a design group, was a satisfying experience for most of the students; they felt it was approaching the type of work they could well encounter in industry, but it remained rather artificial as, being part of the course, it would be assessed. In real life it would not be assessed, but criticised in a hopefully, helpful and constructive way.

5) ASSESSMENT

No two schools taking part in this study organise their final year projects in the same way, neither do ary of the schools follow the same assessment procedure for projects. In an effort to standardize the assessment of projects some schools use a marking scheme of their own design, although the schemes are not always used in the way intended. Supervisors are required to fill in printed forms at varying stages and at the completion of the project. Whether the marking schemes used as designed or 'made to fit' depends on the individual supervisor. The other methods of assessment used are less formal and fall into one or more of the categories described by Dowdeswell and Harris (1979) in 'Project Work in University Science.'

A number of supervisors questioned the validity of assessing projects, but also expressed the view that without some form of assessment it would be difficult to keep them in a final year course. A suggestion was made that projects should be subject to pass/fail system, but in that case how can allowance be made for an exceptionally good project?

The students are usually made aware of the varying assessment procedure used, although they do not always remember much of the detail. It was apparent that some of the information the students remembered was inaccurate, particularly relating to the possible marks they could achieve for their project. Subsequently it was found that the students obtained the correct information either from their supervisors or from other students. Whilst being aware of the danger of becoming too involved with project work at the expense of other studies the majority of students were happy about the time they put into their projects and the marks they could possibly get out of it. One or two were not so happy, as one student remarked

> *".... I'm not sure the time and effort you put into it (the project) is worth the return in terms of marks - but it is good experience...."*

Another look at Table 1 (page10) gives further reinforcement to the above statement.

In only one school in this investigation was the project marked by the supervisor alone. All others used at least one other assessor or marker internally, naturally all projects were subject to scrutiny of the external examiner.

Whatever method of assessment was used the students felt it was reasonably fair, and some students remarked that to fail a project requires some effort. The last comment was also echoed by supervisors who also added that students were invariably given the benefit of the doubt in assessment procedures related to projects.

6) RESOURCES

Resources are one of the most important influences on the effectiveness of projects for the following reasons:

1) Constraints on possible topics
2) Availability of equipment for student use
3) Cost limits on each project

Few of the projects studied were free from problems involving resources. The degree of delay varied in the extreme, but the most common problem was locating the type of equipment needed to carry out the appropriate experimental work. The equipment involved was not necessarily of a highly specialized nature. Of necessity the students had to work through the technicians, who were generally helpful to project students. One comment was:

> *".... There are so many people chasing after the technician. There's only one man and he is the one to see....people got really cheesed off roaming around looking for things...."*

One student was provided by a technician with a piece of equipment he did not realise he required. In another case a student went to Bristol to pick up a standard laboratory reagent, or risk wasting at least a week before it could be delivered. Those examples are extremes, but for them to occur in such small group of case studies suggests that similiar events may occur quite often.

Another problem happily resolved involved a highly specialized item of equipment similiar to one used by a student on placement. Quite by accident the student discovered, from a member of staff unconnected with the project, that such a piece of equipment existed in the School would be available for the project. The student remarked

> *"....it was incredible, no-one else seemed to know about it...."*

Students who had project experience on placement found the provision of equipment and materials available for their projects disappointing.

> *".... We've been spoilt. On placement anything we required was ordered and provided within a few days...."*
> *".... I've had no problems at all.... There are always people sitting round in the lab waiting for something thet can't get..."*
> *".... On placement equipment was always available, here you sometimes have to book in advance...."*
> *".... the irritating thing, we've found is.... the department has only two meters of the accuracy we require its not enough for everyone who needs them...."*

Most of the students, when talking of problems involving resources, made the point that their colleagues were in similiar, if not worse, straits with their projects because of difficulties over equipment and materials. As one member of staff commented

> *".... they've just got to make the best of it...."*

It is possible that an individual supervisor could check on the availability of some equipment but there is often no way of establishing if it will be required by someone else at the same time, or over the same period. Further investigation is needed here.

REVIEW AND RECOMMENDATIONS

To attempt to make any generalised comments about the management and use of projects in the schools which have participated in the study would be rash if not to say reckless. Such a small number of projects have been investigated in comparison with the number carried out in each final year that it might be suggested to have been, a fruitless exercise. That is not so.

It is well known that students generally enjoy their project work despite the set backs and frustration that can occur. The students welcome the change from normal course work and the degree of independence they have over how they go about the work they carry out during the project. For the staff supervising projects it can be very rewarding or extremely hard work dependent on the student(s) and the particular project. One underlying and crucial feature of a project is its assessment. Like it or not both staff and students can never forget that what ever else is said about the reasons for projects, in the end assessment is carried out and the marks go towards the students final degree classification.

Many staff and students have commented on the validity of assessing projects and what is looked for in the execution of a project and its report when assessment takes place. The responses given by staff and students ti the questionnaires (Harris and Smith 1981) show some interesting differences. Staff in question 7 (a) are asked how they assess a project. The students in question 1 are asked what they think the staff are looking for when marking the project. For the staff the two most important features seem to be:

i) Presentation of the report
ii) Laboratory performance

For the students the first two are:

i) Understanding of methods used
ii) Relevant and well designed experiments

It is perhaps possible to equate the second response of

each group, but the students do not seem to perceive report presentation as the most important feature. One must remember that small numbers are involved here, and should a much larger group be similiarly questioned the responses would perhaps be different. But on the point of reports most students claimed to have had little or no guidance on how to write up their project work other than in the form of a scientific paper. To emphasise this point many supervisors comment (in the case studies) that they have been disappointed in the standard of the reports they receive. It would seem that the development of skills in report writing is a subject that needs attention in the majority of Schools taking part in the study.

To return to the area of assessment, as can be seen in Table 1 (page 10) the differences in available marks for projects in different schools is quite startling. These differences in themselves are not the concern of this study, but at the lower end of the scale one can hardly expect a student to over exert himself for a possible 3 or 4% of his degree mark however much he might enjoy doing a project. An interesting look at project assessment is given by Clemson (1977). A more important point is the validity of giving a percentage mark for a project. It was suggested by one supervisor, amongst many who were concerned about assessing projects, that they might be graded as degrees are 1st, 2 (i) 2 (ii) etc as a more equitable means of indicating the standard achieved in a project, for many aspects of project work cannot be directly quantified.

Perhaps one of the non-quantifiable aspects of a project could be its initiation. The starting up of a research project is not easy. Students who have had good placement experience are immediately at an advantage at this stage. For students who have not been so fortunate or who have had no industrial placement the beginning of a project

can be quite an ordeal. It is possible that some staff feel that once a student reaches the final year he or she should be quite capable of almost anything. As can be seen in the case studies these perceptions are not always true. Initiation of a project is an aspect not to be lightly ignored, as student performance or lack of it, in this area could influence project assessment at a later stage.

Many staff try to supervise projects that will not involve them in too much extra work. This may be a laudable idea, as long as they are fairly readily available to a project student with problems. There are other supervisors that become too involved in the projects. So much so that the student feels it has been taken over. Undoubtedly this is unintentional, but is something to be wary of when supervising final year projects, for the question could be asked who, then is being assessed, the student or the supervisor?

Oversupervision is one of the points students bear in mind when choosing a project topic. Where choice is available most students consider the supervisor and the topic very carefully. Some potential supervisors are avoided as they are known not to be very helpful, and it is known that complicated wording of possible projects makes students steer clear, which can mean that some possible supervisors hardly ever have a project student. This can result in a heavy project load for other members of staff. An indication of project load is given in staff responses to question 5.

Another area of concern to those responsible for projects, be they in the final year or earlier years of a degree course, is resources. In a project that requires experimentation it is not only the strain on available equipment supplies, but the physical space required for that equipment to be set up and used satisfactorily. Some schools have overcome this problem by having pairs of

students carry out projects. But in taking this step they have created a problem in another area - assessment. The problem of resources could easily be solved were an infinite amount of money and extra space available. Since such a probability is so remote as to be laughable extra care must be taken, when devising projects, that the equipment required has a more than even chance of being available.

Summarizing, points which could well be worthy of further consideration by those involved with the management and supervision of final year projects are:

Development of report writing skills
Possible use of grades rather than marks
Care over the initial stages of a project
Danger of oversupervision
Presentation of possible topics
Availability of necessary resources
Assessment criteria

It would be irresponsible to suggest here any order of priority for the above list, but it could be that improved communications in every aspect of the conduct of projects would ease any problems considerably.

APPENDIX A

Appendix AI

UNIVERSITY OF BATH - SCHOOL OF EDUCATION

STUDY OF FINAL YEAR UNDERGRADUATE PROJECTS

1. Please summarize the way in which you assess a student project, i.e. what will you look for when you assess the work and the report.

   If you can indicate also heavy or light weighting for any of these, it would be useful.

2. (a) Is there a statement of criteria for suitable research projects?

   (b) If yes does it represent the views of the whole School or a group within the School?

   (c) If yes how long has it been in use?

   (d) If no do you feel that there should be such a statement?

   (e) Is there discussion about projects : amongst colleagues?

   : with the group leader?

   : with students?

3. The following list has been suggested as including most of the attributes which you might expect a student to demonstrate in doing a project. For each attriubte please indicate the approximate percentage weighting you would use in assigning a final mark. (There are 13 attributes so an average weighting for any one would be about 8. However you may rate many at zero and others at several times the average).

   Although it may be expected that students will demonstrate these attributes it might be assumed that they had developed them previously and the project is therefore not structured to give instruction in that aspect. Please indicate for each whether you would say that the responsibility for developing that attribute is, in your view, mainly in prior courses and the project, or mainly in doing the project.

		% weight	Teacher Response
a)	The ability to perceive a problem, i.e. to recognise that certain questions should be asked.		
b)	The ability to rationalize a problem, i.e. to place it in its scientific context and explain why it is important.		
c)	The ability to isolate a single testable hypothesis relating to a given problem.		
d)	The ability to design a critical method for testing a hypothesis.		
e)	A high level of knowledge in a specific area.		
f)	Skill in doing a critically relevant literature review.		
g)	Independence.		
h)	Ability to work under constraints (of time, space, funds).		
i)	Ability to use statistical inference critically.		
j)	A high level of interest in studying in this field.		
k)	Ability to interpret experimental or survey data.		
l)	Ability to present ideas and information lucidly.		
m)	Practical laboratory and field skills.		
n)	Other(s). Please specify.		

4. What is your view of the following methods of helping a student during his project. Please rate as : Good, Satisfactory, Inappropriate.

   a) Direct suggestions

   b) Socratic questioning

   c) Warnings

   d) Answering questions

   e) Encouragement

   f) Help with the drafting of the report

   g) Criticisms of the draft report.

5. What do you consider the maximum number of times a supervisor might review a project report?

   0 1 2 3

6. a) Do you believe that the variations within your group in the School in the assessment of projects is:

   Minor Considerable

   b) If considerable does this cause you concern?

7. a) Do you believe that the variation between groups in the School in the assessment of projects is:

   Minor Considerable

   b) If considerable does this cause you concern?

8. From your point of view has the average level of project work done by students in the last couple of years been:

   Very Good Satisfactory Disappointing

9. Do you consider the weighting of the project in determining the degree class to be:

   Too High About Right Too Low

10. Do you consider the total resources devoted to project to be:

    Too High About Right Too Low

11. Which, if any, of the following kinds of resources have been competed for seriously between project work and other activities.:

    Technical help, space, supplies, equipment, none of these.

12. If any severe competition has been indicated in your answer to 11, were the projects competitive with research or teaching?

13. Would you consider that the contributuion of the undergraduate projects to the research work of the School was:

    Considerable Slight Insignificant

14. Are the project reports in your group marked by:

    One, two, or more than two, examiners.

15. If the answer to 14 is two or more, does the supervisor provide the other markers with any notes on the help the student has had and the quality of performance in the laboratory or field?

16. What is your estimate of the total number of hours you spend over the whole year working with each student doing a project. (If this varies widely please indicate the range).

17. a) Do you have a regular schedule for meeting students to review the state of their project?

    b) If yes how often?

    c) If yes do you provide a summary of your view of their progress:

        Yes in writing

        Yes verbally

        No

    d) If no what would be the likely frequency of discussion

        the likely duration of discussion?

Appendix AII

UNIVERSITY OF BATH - SCHOOL OF EDUCATION

UNDERGRADUATE FINAL YEAR PROJECTS

There is currently great interest in project work in higher education. Questions are being asked about what projects do well, what kinds are most useful, how they are assessed, and how much they cost in student and teacher time and in other resources. Your answers to the questions which follow will be useful both here and at other universities.

Please circle the appropriate responses, unless otherwise indicated.

Space is left after each question for comments. If you need more space, use the backs of the pages, numbering your comments appropriately. If you are willing to give your name, please do so, but please do indicate your school of study.

Please return the completed questionnaire to Barbara Smith, School of Education.

Thank you for being willing to help.

Name: School:

1. Before looking at the questions which follow could you outline briefly here what you believe the staff will be looking for in your project work and your report when they come to assign a mark.

2. Which of the following types of work would be your first choice?

Independent industrial research

Independent academic research

Teaching — Research Technician

Other (please specify) — Commercial/Industrial

3. The following have been suggested as appropriate aims for a total University degree program.
Give your judgement on each as to whether it is of High, Medium or Low importance.

	High	Medium	Low
(a) To provide a broad base of factual knowledge			
(b) To outline the frontiers of knowledge in the major areas of the subject			
(c) To train in the practical skills of the discipline			
(d) To develop competence in research planning.			
(e) To develop competence in the use of the literature of the subject.			
(f) To develop habits of critical analysis			
(g) To increase interest in your field of study			
(h) To develop use of statistical skills and inference			
(i) To improve ability to work effectively with others			
(j) To qualify you for a job			
(k) To develop you as an independent scholar			
(l) To give you confidence in your intellectual abilities			

.../...

	High	Medium	Low
(m) To understand social implications of your discipline.			
(n) Other(s). (Please specify)			

4. Whom do you consider responsible for the framing of the question on which your project is based?

   You

   You and a staff member (more or less equal)

   A staff member

5. Whom do you consider reponsible for the design of the experimental approach to the project you are doing?

   You

   You and a staff member (more or less equal)

   A staff member

6. How would you describe the level of your background knowledge in the field of your project at the time you selected it?

   High Medium Low

7. How would you rate the importance of the contribution of your project to the total University experience?

   High Medium Low

8. The following functions have been suggested as applying specially to projects. Please indicate whether you consider each to be of High, Medium or Low importance:

	High	Medium	Low
(a) To develop the ability to perceive a problem, i.e. to recognize that a certain question should be asked.			
(b) To develop the ability to rationalize a problem (i.e. to place it in its scientific context and explain why it is important).			
(c) To develop the ability to isolate a single testable hypothesis relating to a given problem			
(d) To improve ability to design a critical method for testing a hypothesis, i.e. to move from a question to a research plan.			
(e) To increase your knowledge in one specific area to a high level.			
(f) To improve skill in doing critically relevant literature reviews.			
(g) To increase independence.			
(h) To review and consolidate statistical knowledge.			
(i) To increase interest in studying your subject.			
(j) To improve the ability to interpret experimental data critically.			
(k) To increase ability to present information and ideas lucidly.			
(l) To increase ability to work under constraints (of time, space, funds).			
(m) To develop laboratory (field) skills.			
(n) Other(s) (Please specify)			

9. In the table below are 7 rather general aspects of a course of studies. These are ones which might be considered to contribute to your preparedness for a research project.

   For each of your years 1, 2, 3 and collective placements, (where applicable), indicate whether the contribution to your education in that period was High, Medium, Low or Zero. This is not a statement of what should be but your judgement of actual achievement. (Insert H, M, L or O in each box).

Aspect	Year 1	Year 2	Year 3	Placements
1. Use of library resources				
2. Critical review of literature				
3. Formulation of research projects i.e. recognition of problems worth tackling				
4. Rationalization of research projects				
5. Design of research experiments (or surveys)				
6. Critical analysis and interpretation of data				
7. Practical laboratory and field skills				

10. In which month do you plan to start drafting your report?

11. What percentage value do you believe the School assigns to your project in determining your final standing, i.e. the class of your degree:

12. (a) Have you received information from your teachers on what they will be looking for in your project work and report when they assign a mark.

Yes No

(b) If Yes, was it given to you:

Verbally In writing

(c) If Yes do you consider it:

Adequate Inadequate

13. Please rate the contribution of the staff, your fellow students, and the technical staff as High, Medium, Low or Zero in relation to each of the kinds of assistance listed below:

	Staff	Fellow Students	Technical
1. Advice on experimental setup			
2. Assistance with experimental setup			
3. Assistance with actual experiments or surveys			
4. Instruction on laboratory techniques			
5. Discussion of overall plan			
6. Other(s). Please specify			

APPENDIX B

Appendix BI

UNIVERSITY OF BATH - SCHOOL OF EDUCATION

STUDY OF UNDERGRADUATE FINAL YEAR PROJECTS

There is currently great interest in project work in higher education. Questions are being asked about what projects do well, what kinds are most useful, why are they used, how they are assessed and how much they cost in student and teacher time and in other resources. Your answers to the following questions will be used to help clarify some of these queries.

Space is left after each question for comments. If you need more space, use the backs of the pages, numbering your comments appropriately.

All answers and comments given by you on this questionnaire are STRICTLY CONFIDENTIAL and will not be made available to anyone other than myself without your written permission.

Please return the completed questionnaire to me, Barbara Smith, Room L-4.11, or to the School of Education Office, 1 West 4.6. Thank you for being willing to help

NAME: SCHOOL:

1. Why do you think projects form part of the final year course in your School?

2. (a) Do you think projects feature as a major or minor part of the final year? (Please circle appropriately.)

major intermediate minor

(b) Do you think any change of the emphasis indicated in 2(a) is needed?

Yes No

(c) Please give reasons for your answer to 2(b).

3. (a) What criteria do you use in devising a project topic?

(b) Are any other criteria used in your School?

Yes No

(c) Do you think common criteria should be used in devising a project topic in your group/School? Please give reasons for your answer.

4. What characteristics would you look for in your 'ideal' student for project work and why?

5. (a) How many projects do you usually supervise?

(b) How frequently do you expect to see your project student?

(c) Of what duration are these meetings?

(d) What do you estimate to be the total number of hours you spend on each project over an academic year?

(e) Do you consider this total to be excessive?

(i) too much (ii) about right (iii) too little

6. (a) What proportion of marks does the final year project contribute towards the final degree mark?

(b) Do you consider this proportion to be:

(i) too big (ii) about right (iii) too small

(c) Please give reasons for your answer to 6(b).

7. (a) Please describe the method of assessment you use when marking a final year project.

(b) Is this method used throughout the School?

Yes No

(c) If No to 7(b), do you think there should be a common system of marking throughout the School? Please give reasons.

8. Have you ever found difficulty in distinguishing between your role as an assessor and that as a supervisor? Please give reasons for your answer.

9. (a) How many people mark the project reports?

(i) One (ii) Two (iii) More than two

(b) If the answer to 9(a) is two or more, do any of the markers, other than supervisor, have any contact with the project in earlier stages than the final report? If so, please describe.

(c) Does the student have to give a seminar or viva of any sort in connection with the project? If so, please describe.

(d) If the answer to 9(c) is yes, are the students assessed on their performance in this exercise, and if so, how much weight does it carry?

10. What do you consider to be the aims and objectives of project work in the final year course?

11. Which, if any, of the following kinds of resources are competed for between project work, research and teaching:

Technical help, space, materials, equipment, any other (please specify)

12. If any severe competition exists, are projects competitive with research, teaching or both?

Appendix BII

UNIVERSITY OF BATH

School of Education.

Undergraduate Final Year Projects

There is currently great interest in project work in higher education. Questions are being asked about what projects do well, what kinds are most useful, how they are assessed and how much they cost in student and teacher time and in other resources. Your answers to the questions which follow will be used to clarify some of the questions asked and will be useful here and in other universities.

Please circle the appropriate responses, unless otherwise indicated.

Space is left after each question for comments. If you need more space, use the backs of the pages, numbering your comments appropriately.

All answers and comments given by you on this questionnaire are STRICTLY CONFIDENTIAL and will not be made available to anyone other than myself without your written permission.

Please return the completed questionnaire to me, Barbara Smith, Rm. L4.11 or to the School of Education office, 1W.4.6. Thank you for being willing to help.

Name: School:

1. Before looking at the questions which follow, could you outline briefly here what you believe the staff will be looking for in your project work and your report when they come to assign a mark.

2. Are you given a choice of project topic?

Yes No.

3. Do you know who will be supervising each topic before you choose?

Yes No.

4. Does knowing who will supervise a project influence you in any way?

Yes No.

5. If the answer to Q.4 is Yes, please give your reasons.

6. a) Have you received any information on what staff will be looking for in your project work and report when they assign a mark?

Yes No.

b) If Yes, was it given to you:

Verbally In writing

c) If Yes, do you consider it

Adequate Inadequate

7. What percentage value do you believe the School assigns to your project in determining your final standing, i.e. the class of your degree.

8. a) Have you encountered project work in earlier years of your course?

Yes No.

b) If yes, please state in which years:

c) If no. would you have liked to have had experience of project work?

Yes No.

9. a) Have you encountered project work on placement?

Yes No.

b) If yes, please indicate your feeling towards project work:

10. When was your choice of project made?

Last academic year This term (autumn/spring)

APPENDIX C

CASE STUDY A

Introduction

Standard Project Data

Analysis of Student Time

Project Choice

Development and Progress

Staff/Student Relationship

Assessment

Has Anything Been Gained?

Overall Impression

INTRODUCTION

This case study is an attempt to give a picture of the working of a final year undergraduate project, without going into the detail of the subject under investigation. For reasons of confidentiality the student is known as A_s and the supervision A_t. In this instance the student is particularly able.

Standard Project Data

Duration of project	2 terms	
Timetabled hours	154 hours/year	(1)
Possible Project Mark as a proportion of Final Year Marks	26-35%	(2)
Possible Project Mark as a proportion of Degree Marks	22-28%	(2)

(1) It is expected that students will spend more than the timetabled hours on their project.

(2) The variation in possible project marks is dependent on the number of electives taken in the final year.

Analysis of Student Time Spent on Project

This information was collected by the student completing a weekly log sheet showing the way in which his project work time was split up. The categories involved are shown in the table below. Weekly totals are shown in the extreme right hand column, category totals on the bottom line, and the overall total in the bottom right hand corner.

W/ending	Reading	Writing	Experimental (1)	Talking to supervisor	Talking to other students	Totals
5/11			14½			15
12/11			18½		2½	21
17/11			10½		1	11½
24/11			14	1	1	16
1/12			11½	½	½	12½
8/12	½		7½		1½	9½
±5/12			6	1½		7½
12/1			17½	½	1	19
19/1			9		½	9½
26/1			18	2		20
2/2		3	8		½	11½
9/2		12	2½			14½
16/2		17½	4½	1	1	24
23/2		31½				31½
3/3		½	3	½		4
10/3		½	½			1
TOTALS	½	65½	145½	6½ (2)	9½	227½

(1) In this case Experimental = computer time.

(2) Supervision/Student contact was probably greater than indicated as many casual discussions took place.

PROJECT CHOICE

Student Comments	Supervisor Comments
A_s wanted to do a project with A_t as his supervisor because "He would have the best projects . . ." and "I would be doing something relevant to the work that the department was doing . . .". Having talked to A_t about the possibilities and having told him of some work already done on placement A_s found himself, as he put it, "lumbered" with a theoretical study in the field of his previous work. A_t would have preferred to do the practical aspect of the study but as he was so familiar with the subject he was not unhappy to have it as his project.	The students taking projects within this department are more often than not those who are expected to obtain first class honours degrees. They are usually people who have had some industrial experience prior to coming to University and are usually following a three year full time course. A_t comments that ". . . we are disappointed if our students get a 2(i). . .".
	A_t knew well of A_s's capabilities and wanted A_s to do a project for him and was pleased to be able to use the experience A_s had already gained in industry - it coincidentally being in a field in which A_t was greatly interested.

DEVELOPMENT PROGRESS

STUDENT COMMENTS	SUPERVISOR COMMENTS
Although the title of the project A_s is doing was long ago agreed, the actual definition of the problem and the boundaries in which to work were very hard to extract from A_t. A_s did not want to get fully into the work only to find the emphasis was wrong and that he would initially have to start again - he knows that this has happened to other students in earlier years. Having had experience in a directly related field, A_s knew how to approach the problem and what he had to do. The only difficulty arose in the way in which the computer operates which resulted in more time being taken to de-bug the program than was either expected or necessary.	Once the project definition was confirmed A_t was happy to leave A_s to carry on with the development himself, and was pleased with the way he did so. A_t was given infrequent but satisfactory progress reports by A_s and decided by the middle of the Spring term that A_s had done more than enough therefore he told A_s to stop further development and begin writing up.
Once the de-bugging was completed the program was transferred to a telephone linked computer, which was more satisfactory - but could only be used at certain times of day - i.e. cheap rate times only. Everything has its drawbacks. The work had to be done in conjunction with the students doing the practical side of the study, but this was not altogether satisfactory as it took them some time to become as well up in the system as A_s.	
Because A_s had progressed so well he was told by A_t to stop any further work on the programme development and to start writing up, even though their were still a few weeks of "project time" still to go. A_s was pleased to start writing up as he was sure it could be done well before exam time, however he was not really looking forward to it.	

STAFF STUDENT RELATIONSHIP

STUDENT COMMENTS	SUPERVISOR COMMENTS
A_s is pleased to be working with A_t as his supervisor and is in accord with his philosophy of not bothering A_t unless it is really necessary. It would appear that A_t is sometimes difficult to work with . . . "As long as you keep on the right side of him he's alright . . . he likes putting people down at times; as long as you can put up with that . . . I suppose its his privilege really," but A_s seems to be quite happy about the situation and it would appear to have worked out satisfactorily.	According to A_t, A_s is a typical 'good' student putting a great amount of work into all his activities. It is this type of student that A_t likes to have doing projects with him as they tend to get on with them and not bother him unduly. Rather quixotically A_t says that he has more time for this type of student than those less capable as he gets quite a fair amount of motivation from, say, A_s, which prompts him to motivate A_s more - this A_t finds most stimulating. So well has this project gone that A_t finds himself constrained to protect A_s from himself as he had to stop him from doing any more work on his project. " . . . he is doing too well - hed'd get over 80% for his project as it is now . . ." A_t also said that such was the standard of work that A_s was producing that should be continue for the time allowed A_s would undoubtedly produce the equivalent of a good MSc thesis at the end of his project.

ASSESSMENT

STUDENT COMMENTS	SUPERVISOR COMMENTS
" . . . its a very vague business, they're not very clear how they work." This was the first comment made by A_s on the marking procedure used for final year projects in this department. A_s knows the staff use a marking grid but thinks that the supervisors tend to give marks depending on the class of degree they think the student deserves and make the system fit that rather than the other way round. This is particularly true of A_t, according to A_s, as it fits in with his attitude towards projects. Despite this bending of the rules A_s believes the system to be fair because unless a student is "very stupid" he doesn't choose a project or supervisior where a personality clash may occur or where some antagonism may exist neither does he think that a student would gain because he gets on particularly well with his supervisor.	A basic marking scheme is used which is designed to give a range of marks within which the project mark will fall. An allowance is made for slight adjustment up or down, but this is only used after the marking scheme has been completed. It would appear that A_t is not altogether in accord with the use of this marking scheme. He is more inclined to decide on an approximate mark then fill in the marking grid accordingly. The report is read by another member of the staff, the internal examiner, before the final mark is decided upon, and often the supervisor will have a discussion about the project with him before they come to a decision.
Another point made by A_s was the temptation to become too involved in a project to the detrement of examinable subjects in an effort to gain very high marks. This can happen all too easily since the final year project is often the first introduction to research and investigative work and is hence so different and enjoyable compared to other course work it is easy to be carried away.	Students are aware of the marking scheme. A_t was very pleased with the way in which A_s had approached and worked through his project. The final report was not as well written as it could and perhaps should have been, it does not reflect either A_s's ability or the academic effort put in. It is really too long and it would seem that A_s became bored with writing and correcting it. A_t envisaged some trouble with the internal examiner and did have to have a prolonged discussion with him, finally agreeing on a mark of 83%. There is no doubt that had A_s made more of an effort in writing up, he would have gained considerably higher marks. A_s received a first class honours degree.

HAS ANYTHING BEEN GAINED

The purpose of a project is to learn how to go about research work and the limitations and discipline needed to carry it out. This is the definition A_S gives. He believes projects are a necessary part of the course especially for students with limited, if any, industrial experience. For students, like himself, with a fair amount of industrial experience, projects are not the eye openers that they can be to others, and, A_S thinks, are of no practical use other than acquiring an in depth knowledge of a very small section of the subject.

Overall A_S quite enjoyed his project but would have preferred to have carried out the practical side rather than the theoretical study, but as it was nearly a straightforward continuation of his industrial work he hasn't really gained much.

OVERALL IMPRESSION

A_s is a very capable and sensible student who would do very well in anything he tackled. It would seem that he chose his supervisor first and was not unduly worried about the topic for his project. The fact that he ended up with a theoretical study was a bit of a disappointment but nevertheless he made a good job of it, though the disenchantment crept back in during the writing up of the final report as is obvious by his supervisor's comments. For A_t the experience and capability of A_s were just what he liked in a student doing a final year project, especially since he was able to exploit A_s's expertise in a new area of his own interest. A_t's disappointment with the final report that A_s produced was tempered by the knowledge of the other pressures upon A_s at the time and it is possible he knew that A_s would have liked to have done a practical study.

The relationship between A_s and A_t was very good. A_s was aware of the difficulties in working with A_t who was in turn aware of A_s's capabilities and did his best to stretch, not from a selfish point of view, but only to make A_s aware of them too. A_t was the only supervisor who positively commented on the stimulation he received from working with one of his project students. It would seem that this project ran very well from start to finish, but it is atypical. The frequency of theoretical projects in this department is very small, the type of rapport that existed between A_s and A_t would again not often be encountered. However, as with most things a point of criticism exists. It is the virtual non-use of the library. The subject of this project is very new, so the lack of literature of direct relevance is understandable, but this lack of library activity appears to be of long standing. It would perhaps be expected that a student of 1st class calibre would be more likely to make use of the library than those less able, if this is not so and the library is rarely used by any ug's on this course, there must be some lack of liaison somewhere.

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UNDERGRADUATE PROJECT WORK

PART II: QUESTIONNAIRE RESPONSES

N.D.C.Harris

and

B.Smith

University of Bath 1981

CONTENTS

Introduction	page 1
Staff Questionnaire	page 2
Staff Responses	page 6
Student Questionnaire	page 27
Student Responses	page 29

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Introduction

As part of the study of undergraduate project work recently carried out at the University of Bath (Harris and Smith 1981) students and supervisors were asked to complete a questionnaire. The way in which the questionnaires were answered is presented here. Only a small number of students and staff were involved, 22 students and 17 staff, but an indication of possibly poor communication is evident when comparing the responses to similar questions.

STAFF QUESTIONNAIRE

UNIVERSITY OF BATH - SCHOOL OF EDUCATION

STUDY OF UNDERGRADUATE FINAL YEAR PROJECTS

There is currently great interest in project work in higher education. Questions are being asked about what projects do well, what kinds are most useful, why are they used, how they are assessed and how much they cost in student and teacher time and in other resources. Your answers to the following questions will be used to help clarify some of these queries.

Space is left after each question for comments. If you need more space, use the backs of the pages, numbering your comments appropriately.

All answers and comments given by you on this questionnaire are STRICTLY CONFIDENTIAL and will not be made available to anyone other than myself without your written permission.

Please return the completed questionnaire to me, Barbara Smith, Room L-4.11, or to the School of Education Office, 1 West 4.6. Thank you for being willing to help

NAME: SCHOOL:

1. Why do you think projects form part of the final year course in your School?

2. (a) Do you think projects feature as a major or minor part of the final year? (Please circle appropriately.)

major intermediate minor

(b) Do you think any change of the emphasis indicated in 2(a) is needed?

Yes No

(c) Please give reasons for your answer to 2(b).

3. (a) What criteria do you use in devising a project topic?

(b) Are any other criteria used in your School?

Yes No

(c) Do you think common criteria should be used in devising a project topic in your group/School? Please give reasons for your answer.

4. What characteristics would you look for in your 'ideal' student for project work and why?

5. (a) How many projects do you usually supervise?

(b) How frequently do you expect to see your project student?

(c) Of what duration are these meetings?

(d) What do you estimate to be the total number of hours you spend on each project over an academic year?

(e) Do you consider this total to be excessive?

(i) too much (ii) about right (iii) too little

6. (a) What proportion of marks does the final year project contribute towards the final degree mark?

(b) Do you consider this proportion to be:

(i) too big (ii) about right (iii) too small

(c) Please give reasons for your answer to 6(b).

7. (a) Please describe the method of assessment you use when marking a final year project.

(b) Is this method used throughout the School?

Yes No

(c) If No to 7(b), do you think there should be a common system of marking throughout the School? Please give reasons.

8. Have you ever found difficulty in distinguishing between your role as an assessor and that as a supervisor? Please give reasons for your answer.

9. (a) How many people mark the project reports?

(i) One (ii) Two (iii) More than two

(b) If the answer to 9(a) is two or more, do any of the markers, other than supervisor, have any contact with the project in earlier stages than the final report? If so, please describe.

(c) Does the student have to give a seminar or viva of any sort in connection with the project? If so, please describe.

(d) If the answer to 9(c) is yes, are the students assessed on their performance in this exercise, and if so, how much weight does it carry?

10. What do you consider to be the aims and objectives of project work in the final year course?

11. Which, if any, of the following kinds of resources are competed for between project work, research and teaching:

Technical help, space, materials, equipment, any other (please specify)

12. If any severe competition exists, are projects competitive with research, teaching or both?

BREAKDOWN OF RESPONSES

STAFF QUESTIONNAIRE

79/80

1. Why do you think projects form part of the final year course in your School.

Training in research methods and associated problems	(x 7)
Bring together experimental work, design, academic knowledge and production of a report	(x 7)
Rewarding and motivating for students	(x 4)
Important that students become proficient in practical work	(x 2)
Design can only be taught through projects	(x 2)
Give staff a measure of student initiative	(x 1)
Nearest we get to a real life situation	(x 2)
Valuable Assessment additional to written exams	(x 1)
Part of comprehensive teaching programme	

2. (a) Do you think projects feature as a major or minor part of the final year? (Please circle appropriately).

major		intermediate		minor	
major	12	intermediate	3	minor	2

(b) Do you think any change of the emphasis indicated in 2(a) is needed?

Yes		No	
Yes	2	No	15

(c) Please give reasons for your answer to 2(b).

The following comments were given by respondents who answered 'No' to 2(b).

Already adequate of rest of final year (x 7)

See question 1 (x 6)

Future work (student) will probably be of a research nature (x 2)

Must restrain student enthusiasm (x 1)

Students interpret intentions differently, therefore choose their own degree of emphasis (x 1)

Information gathered from project work provides a very useful yardstick by which certain vital qualities may be assessed (x 1)

Project work in this dept carried low weighting. I would like to see progressive project work in the last two years so that skills and progress could be improved on a cummulative basis x (1)

3. (a) What criteria do you use in devising a project topic?

Objectives are appropriate to the stage in the course (10)

Original, but with some available, relevant literature (9)

Possible in the time available (x 6)

Interesting and stimulating (6)

Gives results, preferably early on (x 5)

Research interests of the supervisor (x 4)

Must contain good (subject material) (4)

Related to a real problem (3)

Must have a number of possible stopping points (x 2)

Supervisor has experience/competence (2)

Must not depend on too many chance elements (x 1)

The capability of an average student and the potential of an outstanding one (x 1)

Whether it will be of use to the student in later times (x 1)

Comment: I try to tailor a project to the students strengths and weaknesses to try to improve his weak points.

(b) Are any other criteria used in your School?

Yes		No	
Yes	7	No	6

- ve comment: I don't know what my colleagues think about this.

? comments: Possibly ; Probably

+ ve comment: The project may have been devised as a follow on to work carried out by the student in period of industrial training

(c) Do you think common criteria should be used in devising a project topic in your group/School? Please give reasons for your answer.

- ve 6 + ve 9

Not necessarily 1

Contd/..

3. The negative responses may be summarized thus:

As long as the project is possible in the time available and the students are aware of the criteria by which they will be assessed then supervisors should have a free hand in devising topics.

Three types of comment were received with the positive responses:

(i) If there is no agreement on criteria problems of comparability in assessment will occur

(ii) Yes, but it is not practical (x 2)

(iii) Common criteria are adopted, but with a degree of flexibility. Some conflict occurs between industrial type projects and other projects primarily because of often improved resources from industry (x 1)

The unsure response came with the comment:

I prefer as much variation as possible and this cannot make much difference in assessment where the weighting factor is low (x 1)

4. What characteristics would you look for in your 'ideal' student for project work and why?

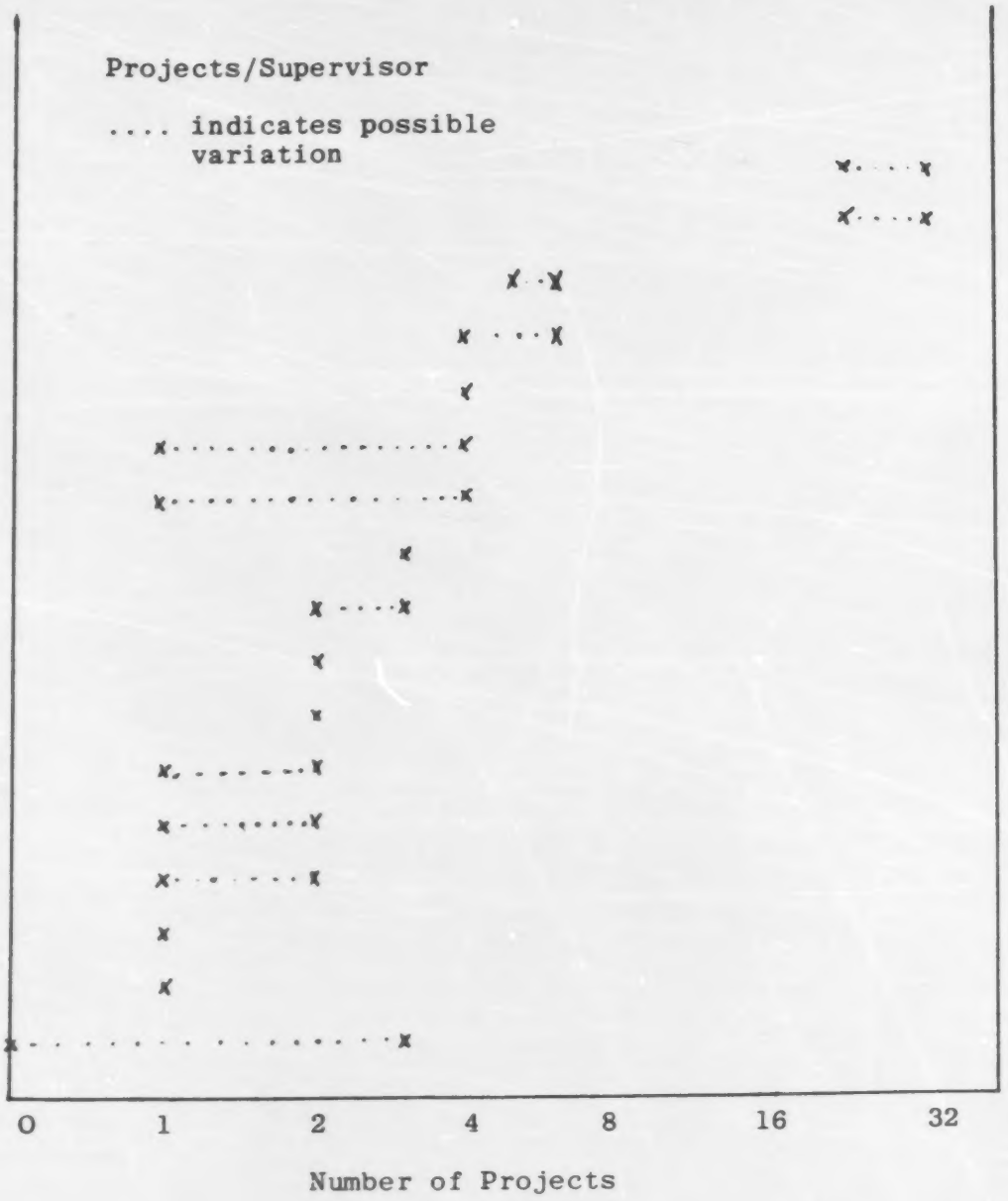
The most popular characteristics cited are:

Highly motivated	(x13)
All round ability and intelligence	(x11)

Other responses are:

Logic and common sense	(x 5)
Patience and determination	(x 6)
Ability to work alone and cope with constructive criticism	(x 3)
Read and interpret literature	(x 3)
Keeness, interest and enthusiasm	(x 3)
Stamina and/or manual dexterity	(x 1)
Good communication skills	(x 1)

5. (a) How many projects do you usually supervise?



5. (b) How frequently do you expect to see your project student?

At least once/week, either casually or formally (x14)

Of the above fourteen, nine indicated this was the minimum they expected.

Other responses:

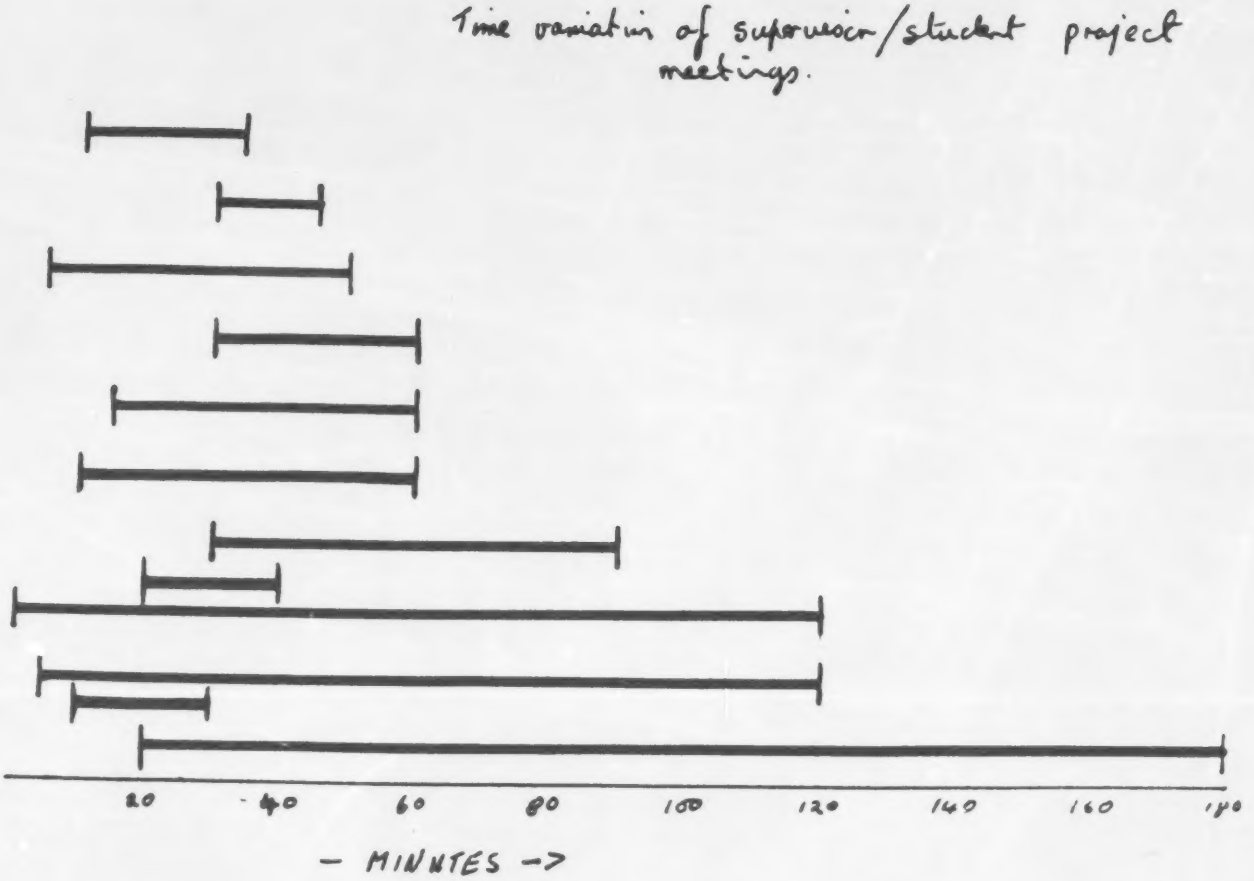
As well as weekly meetings there would be longer ones every 3 - 4 weeks.

A good student only once/month.

As often as they require; I get worried if I don't see them for a week or so.

Depends on the student, sometimes as little as once a fortnight, to as often as everyday.

5. (c) Of what duration are these meetings?

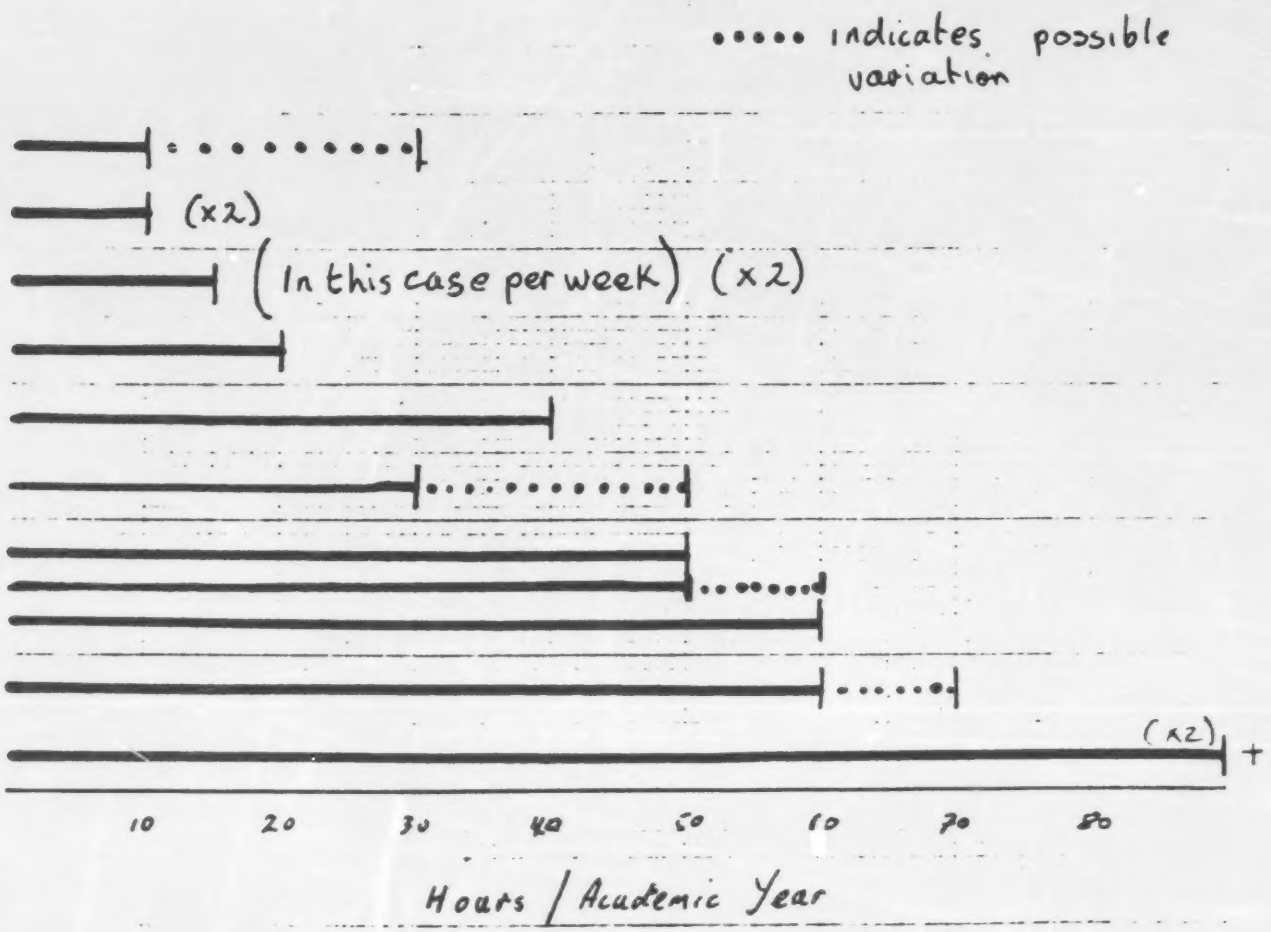


The time variation of project meetings for 12 supervisors is shown above.

The remaining supervisors commented:

'As long as is required'. X 5

5. (d) What do you estimate to be the total number of hours you spend on each project over an academic year?



The estimates of 14 supervisors about the time they spend on projects each academic year are shown above.

One supervisor felt unable to make any estimate as this year is the first time he has supervised a project of this type.

Two other supervisors felt the possible variations, depending mainly on the student, made any sort of estimation impossible.

5. (e) Do you consider this total to be excessive?

(i) too much (ii) about right (iii) too little

(i) 1 (ii) 12 (iii)

(ii) Comment: but it can be a little much when it conflicts with my research.

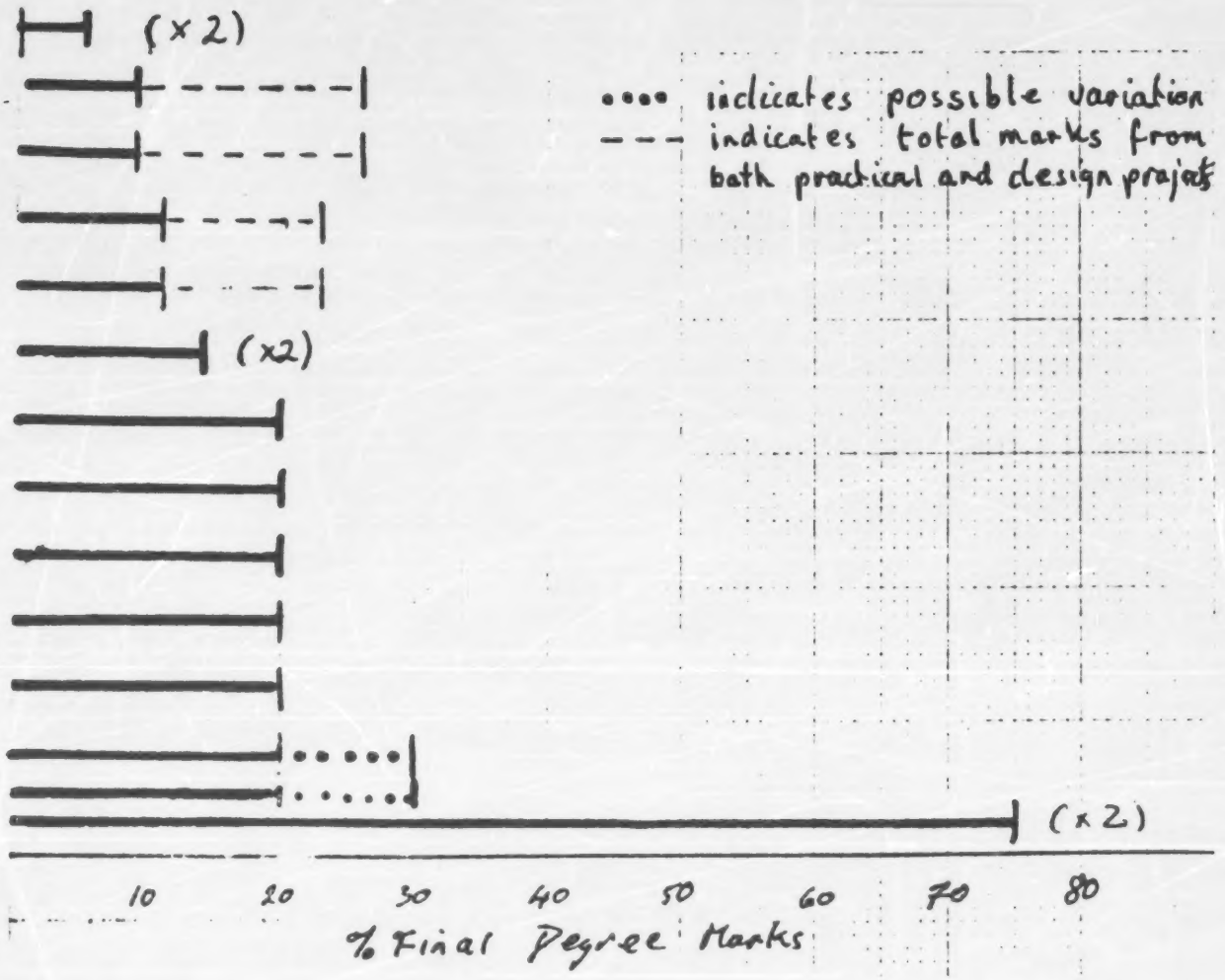
(from respondent who spends 250 + hrs/yr supervising 5 - 6 projects).

Three respondents queried the question and made the following comments:

With many students it is very time consumming.

There is no real answer to this question.

6. (a) What proportion of marks does the final year project contribute towards the final degree mark?



With two major exceptions, one at each end of the scale most project marks available fall between 20% and 30%. in some cases two projects are undertaken, practical and design.

(b) Do you consider this proportion to be:

(i) too big (ii) about right (iii) too small

(i) 1 (ii) 12 (iii) 4

(c) Please give reasons for your answer to 6(b).

(i) Difficulty in objective assessment of degree classification (x 2) (one from (ii)

(ii) Balance is needed between commitment to project and other parts of course. The work given is roughly in proportion.

Equipment breakdown is often encountered through no fault of student, therefore to give a larger % of marks may adversly affect a student blighted with problems.

Research is an important component of training.(x 1)

(iii) Not representative in terms of time and effort expended by most students. (x 4)

7. (a) Please describe the method of assessment you use when marking a final year project.

Criteria for Assessment	Supervisors																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Lab performance/ difficulty of technique	✓				✓	✓	✓		✓	✓	✓		✓		✓		✓
Understanding and treatment of literature	✓					✓			✓	✓		✓	✓				✓
Treatment of results	✓					✓	✓			✓	✓	✓	✓	✓			✓
Presentation	✓				✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
Formal Assessment Method			✓	✓				✓						✓	✓		
Originality/Creativity						✓					✓	✓	✓	✓		✓	✓
Compare standard with previous projects				✓				✓	✓								
Time Spent	✓																
Enthusiasm/Motivation	✓								✓	✓			✓				
It varies from year to year		✓															
Discuss with 2nd Assessor or other staff				✓				✓			✓						
Perseverance and industry						✓								✓			

7. (a) Please describe the method of assessment you use when marking a final year project.

(This is an alternative presentation of results).

Presentation of report	x13
Lab performance/Difficulty of technique	x10
Treatment of results	x 9
Understanding and treatment of literature	x 7
Originality/Creativity	x 7
Formal Assessment Method used	x 5
Enthusiasm/Motivation	x 4
Compare standard with previous years	x 3
Discuss with 2nd assessor or other staff	x 3
Perseverance and industry	x 2
Time spent	x 1
It varies from year to year	x 1

(b) Is this method used throughout the School?

Yes	No	
Yes 8	No 2	? 7

+ ve comment

In some cases, but not necessarily in all

- ve comment

But it is the suggested standard within the School

? comments

It varies (no policy)

How are we to know this, probably no

Don't know

More yes than no (x 2)

7. (c) If No to 7(b), do you think there should be a common system of marking throughout the School? Please give reasons.

3 negative replies were received to this question.

No. It is unnecessary.

No. School is very diverse.

No. It is easier, and probably fairer for individuals since projects can very widely.

4 non-commital answers were given.

The (formal scheme) is our present attempt to ensure uniformity. The system is not perfect but better than purely intuitive assessment.

Not possible unless projects are more uniform which, to some extent, would destroy some of their best features.

No one system is perfect so some variation is worthwhile.

Projects can sample some skills only.

8. Have you ever found difficulty in distinguishing between your role as an assessor and that as a supervisor? Please give reasons for your answer.

An interesting split of replies to this question. Twelve are very much negative, three negative with qualifications and only two positive.

Negative responses:

No (x 4)

Rarely (x 1)

No. They are different types of job. (x 1)

No. I avoid personality clashes with students (x 1)

No. I don't consider assessment until the end. I try to get the student to develop analytical, critical and technical abilities and worry later about how they did. (x 2)

I have never considered this to be a problem. (x 1)

No - because one is examining a number of other reports supervised by other staff as well. In the main it is necessary to allow the student to carryout a fairly independent piece of work (beyond the detailed supervision stage) and make his own mistakes and learn from them.

(x 1)

Qualified responses:

No, except where there is more than one student working on the same project - some need more help than others.

(x 1)

Generally not a problem. However with a not interested and unreliable student I probably make a premature assessment which affects subsequent supervision. This has only happened once. (x 1)

When I have had difficulty it has arisen out of the conflict between my loyalty/area of responsibility to the student compared to that towards the "scientific/professional community. In such cases, I have opted for my responsibility towards the professional community and have requested moderation by a second assessor. (x 1)

No. Having supervised a student it is relatively easy to determine whether or not he is a good, bad or average student from his reaction to any help you may give him and this may enable you to find out more about his weaknesses than letting him struggle through on his own. However often one feels that a student ought to have written a far better project report than the one presented. (x 1)

Contd/..

8. Positive responses:

Yes. As a supervisor I want my students to succeed in what they do, so may want to save them from mistakes or unduly influence their work. An assessor should be an impartial observer. (x 1)

Yes, but one gets to live with the situation. Marking and assessment attitude reflects the importance attached to the project.

There are frequently discrepancies between the final written work. The final report masks difficult periods but as an assessor I try to take this into account. (x 1)

9. (a) How many people mark the project reports?

(i) One (ii) Two (iii) More than two

(i) 2 (ii) 12 (iii) 3

(b) If the answer to 9(a) is two or more, do any of the markers, other than supervisor, have any contact with the project in earlier stages than the final report? If so, please describe.

Little or none (x 5)

No (x 3)

No. Second marker arbitrarily designated at the marking stage. (x 2)

The report is seen by supervisor, assessor and second reader, but only marked by supervisor. (x 2)

Usually there is informal contact and also in departmental seminars. (x 2)

Yes - one assessor (x 2)

(c) Does the student have to give a seminar or viva of any sort in connection with the project? If so, please describe.

Two seminars one early in the first term and one at the end of the project. It is possible that the project could be discussed in the viva. (x 5)

No x 5

Two seminars, one at the end of the first term, the other at the end of the project (x 2)

Short oral presentation, 15 - 20 min including questions.

Students may be asked to explain or even defend their designs. (x 2)

Yes, viva with assessor in presence of a chairman and supervisor. Supervisor is only present as an observer. (x 2)

(d) If the answer to 9(c) is yes, are the students assessed on their performance in this exercise, and if so, how much weight does it carry?

No (x 4)

Contd/..

9. Final viva may be assessed by external examiner who may discuss project. (x 5)

Yes, but carries little or no weight in final mark (x 1)

Yes, about $^{1}/_{3}$ of all project marks (x 2)

A startling difference exists between the last two comments, especially when it is known that in both schools projects are carried out in pairs.

10. What do you consider to be the aims and objectives of project work in the final year course?

See question 1. (x 7)

Preliminary training in research methods and practical techniques hopefully through to completion. (x 5)

Gets a realistic view of how much of the theory he has been taught works in practise. (x 4)

Aims: to give experience in tackling a realistic problem where there is no known definite outcome.

Objectives: after doing the project the student should be able to apply his knowledge to solving a problem and reporting the results. (x 1)

To cause the student to face up to design problems which may beset him when he leaves University and to widen his experience of the subject he has chosen. (x 1)

Most respondents made more than one point in reply to this question.

11. Which, if any, of the following kinds of resources are competed for between project work, research and teaching:

Technical help, space, materials, equipment, and other (please specify).

Technical help	14
Space	17
Materials	14
Equipment	13

Others specified:

Time	2
Computer Time	1
Staff	1

12. If any severe competition exists, are projects competitive with research, teaching or both?

Both	(x 4)
Primarily research	(x 3)
Projects are teaching?	(x 1)
Projects receive considerable priority	(x 1)
So far severe competition has not occurred	(x 1)
Most of my research is done in UG Projects	(x 1)
There do not after seem to be problems which cannot be amicably resolved	(x 2)
Usually structure the project so as not to interfere with research	(x 1)
Ideally complimentary	(x 1)

STUDENT QUESTIONNAIRE

UNIVERSITY OF BATH

School of Education.

Undergraduate Final Year Projects

There is currently great interest in project work in higher education. Questions are being asked about what projects do well, what kinds are most useful, how they are assessed and how much they cost in student and teacher time and in other resources. Your answers to the questions which follow will be used to clarify some of the questions asked and will be useful here and in other universities.

Please circle the appropriate responses, unless otherwise indicated.

Space is left after each question for comments. If you need more space, use the backs of the pages, numbering your comments appropriately.

All answers and comments given by you on this questionnaire are STRICTLY CONFIDENTIAL and will not be made available to anyone other than myself without your written permission.

Please return the completed questionnaire to me, Barbara Smith, Rm. L4.11 or to the School of Education office, 1W.4.6. Thank you for being willing to help.

Name: School:

1. Before looking at the questions which follow, could you outline briefly here what you believe the staff will be looking for in your project work and your report when they come to assign a mark.

2. Are you given a choice of project topic?

Yes No.

3. Do you know who will be supervising each topic before you choose?

Yes No.

4. Does knowing who will supervise a project influence you in any way?

Yes No.

5. If the answer to Q.4 is Yes, please give your reasons.

6. a) Have you received any information on what staff will be looking for in your project work and report when they assign a mark?

Yes No.

b) If Yes, was it given to you:

Verbally In writing

c) If Yes, do you consider it

Adequate Inadequate

7. What percentage value do you believe the School assigns to your project in determining your final standing, i.e. the class of your degree.

8. a) Have you encountered project work in earlier years of your course?

Yes No.

b) If yes, please state in which years:

c) If no. would you have liked to have had experience of project work?

Yes No.

9. a) Have you encountered project work on placement?

Yes No.

b) If yes, please indicate your feeling towards project work:

10. When was your choice of project made?

Last academic year This term (autumn/spring)

BREAKDOWN OF RESPONSES

Student Questionnaire

79/80

1. Before looking at the questions which follow, could you outline briefly here what you believe the staff will be looking for in your project work and your report when they come to assign a mark.

Understanding of methods used and associated problems.	(x 12)
Relevant and well designed experiments	(x 10)
Skill/ingenuity/originality in carrying out	(x 11)
Valid conclusions	(x 9)
Suitable analysis of data and estimation of errors	(x 8)
Clear and appropriate discussion	(x 6)
Presentation	(x 6)
Accurate and concise report	(x 6)
Appreciation of other relevant research	(x 5)
Dedication	(x 4)
Ability to cope with stress and others in group	(x 2)
Application of basic principles	(x 2)
Completion of tasks	(x 2)
Enthusiasm	(x 1)
Quality	(x 1)
Ability to work independently	(x 1)

2. Are you given a choice of project topic?

Yes. No.

Yes 17 No 5

Comment from student who answered "no":

"Topics are allocated so that only people who can do a topic actually do it, based on past performance."

3. Do you know who will be supervising each topic before you choose?

Yes 19 No 3

The three "no's" all indicated that as they had no choice of topic (see Q2) they had no way of knowing who would supervise them.

4. Does knowing who will supervise a project influence you in any way?

Yes 14 No 8

Comment from students answering "yes":

"only to a certain degree. Project must be attractive also".

Comment from student answering 'No':

"although we do not choose topics, I would be reasonably happy with most of the staff".

5. If the answer to Q.4 is Yes, please give your reasons.

Student must 'get on' with supervisor (x 12)

The attitude of some members of staff towards practical work and/or undergraduate students leads one to believe that it would be difficult to carry out a project for them.

(Sentiments similar to above statement) (x 11)

Comment from student who answered 'No' to Q.4:

"We have no choice so we really have to work to please them rather than ourselves unfortunately."

6. a) Have you received any information on what staff will be looking for in your project work and report when they assign a mark?

Yes 12 No 10

b) If yes, was it given to you:

Verbally In writing

Verbally 8 In writing 8

(Both 4)

Comments on information in writing:

"we had a printed handout which mainly covered the layout of the report"

"Not in much detail"

"re quantity"

Comments on verbal information:

"re quality"

"In a lecture"

c) If yes, do you consider it

adequate inadequate

Adequate 11 Inadequate 1

Comments on adequacy of information:

'more than adequate, they always expect too much.'

'Most of us know what is wanted having done similar (smaller) exercises before.'

7. What percentage value do you believe the School assigns to your project in determining your final standing, i.e. the class of your degree.

3 students who thought they knew were wrong, 2 on the low side and 1 on the high

5 students did not know at all

14 students knew approximately the percentage of marks available for their project either in the final year or overall. One who knew the final year marks quite accurately suggested an overall percentage that was very wrong.

8. a) Have you encountered project work in earlier years of your course?

Yes 10 No 12

Comment from student who answered 'No':

"there has been a build up from earlier years to the project work carried out in the final year . . . . Final year project work gives you more say in what you do and the way you do it."

Information from other sources would indicate that one student who claims to have done no project work in previous years has done so on at least one occasion.

8. b) If yes, please state in which years.

9 students indicated previous project experience as part of the course.

1 mentioned project work on placement (see Q 9a)

8. c) If no, would you have liked to have had the experience of project work?

Yes 5 No 5

2 students did not respond directly but commented that earlier practicals had been a build up to project work.

Comment from student who answered "yes":

" . . but the work load on the course would not allow it."

9. a) Have you encountered project work on placement?

Yes 15 No 7

One student who answered "yes" had his experience of project work in a vacation job.

9. b) If yes, please indicate your feeling towards project work:

Placement projects are valuable experience (x 2)

provided - 1) There is a reasonable degree of success (x 3)
2) it is well defined (x 2)
3) it is enjoyable/satisfying (x 2)
4) good supervision is available (x 2)

Projects give experience which:

1) shows you that research is not for you, achievement is too slow (x 1)
2) can reinforce the drive to go into research and development (x 1)

More interesting than most work attempted (x 3)

It's the only way that (professional) ability can be assessed, although we seem to get too many projects. (x 1)

"A lot of work involved and little reward, just a strain". (x 1) (vacation job)

10. When was your choice of project made?

Last academic year This term (autumn/spring)

Last academic year	6
Autumn term	10
Spring term	1

5 students had no choice. They made the following comments:

"It was made up for us during the summer vacation."

"No choice. Started project autumn term"

"We were given projects this term (autumn)".

(ref. last comment, only the outline was given, no detail)